

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended): A cationic dye of formula I

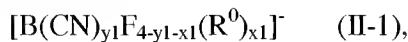


wherein

CAT⁺ is a cation selected from azine, xanthene, polymethine, styryl, azo, tetrazolium, pyrylium, benzopyrylium, thiopyrylium, benzothiopyrylium, thiazine, oxazine, triarylmethane, diarylmethane, acridine, quinoline, isoquinoline, and quaternized azafluorenone dyes,

Y⁻ is an anion selected from CAB⁻ and FAP⁻ ~~CAB⁻, FAP⁻, FAB⁻, and Im⁻~~,

CAB⁻ conforms to formula (II-1)

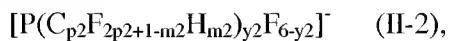


y1 is 1, 2, 3 or 4,

x1 is 0, 1, 2 or 3,

R⁰ is alkyl, aryl, fluorinated alkyl, fluorinated aryl, cycloalkyl or alkylaryl, with the condition that R⁰ may be hydrogen if y1 is >2, and

FAP⁻ conforms to formula (II-2)

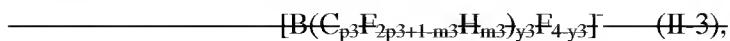


p2 is 1 to 20,

m2 is 0, 1, 2 or 3,

y2 is 1, 2, 3 or 4,

FAB⁻ conforms to formula (II-3)



p3 is 1 to 20,

m3 is 0, 1, 2 or 3,

y3 is 1, 2, 3 or 4,

~~Im⁻ conforms to formula (II-4)~~

~~[(C_{p4}F_{2p4+l-m4}H_{m4}XO_{y4})N(C_qF_{2q+l-k}H_kXO_{y4})]~~—(II-4),

~~X~~ is carbon or sulfur;

~~p4~~ is 0 to 20 and 0 ≤ m4 ≤ 2p4+1,

~~q~~ is 0 to 20 and 0 ≤ k ≤ 2q+1,

~~y4~~ is 1 or 2,

~~m4~~ is 0 if p4 is 0,

~~k~~ is 0 if q is 0, and

~~the carbon atoms of the alkyl chain of the formula II-4 may be bonded to one another by single bonds, where the resultant alkylene chain may in turn be partially or fully substituted by E;~~

~~with the provisos that:~~

~~if X is sulfur, y4 is 2, and if X is carbon, y4 is 1 and p4 or q ≥ 1, and~~

~~3,3' diethoxyethyl 2,2' thiadicarbocyanine trifluoromethyltrifluoroborate is excluded.~~

2. (Withdrawn): A dye according to Claim 1, wherein CAT⁺ is a cation of an azine dye.

3. (Withdrawn): A dye according to Claim 1, wherein CAT⁺ is a cation of a xanthene dye.

4. (Previously Presented): A dye according to Claim 1, wherein CAT⁺ is a cation of a polymethine dye.

5. (Withdrawn): A dye according to Claim 1, wherein CAT⁺ is a cation of a styryl dye.

6. (Withdrawn): A dye according to Claim 1, wherein CAT⁺ is a cation of an azo dye.

7. (Withdrawn): A dye according to Claim 1, wherein CAT^+ is a cation of a tetrazolium dye.

8. (Withdrawn): A dye according to Claim 1, wherein CAT^+ is a cation of a pyrylium dye.

9. (Withdrawn): A dye according to Claim 1, wherein CAT^+ is a cation of a benzopyrylium dye.

10. (Withdrawn): A dye according to Claim 1, wherein CAT^+ is a cation of a thiopyrylium dye.

11. (Withdrawn): A dye according to Claim 1, wherein CAT^+ is a cation of a benzothiopyrylium dye.

12. (Withdrawn): A dye according to Claim 1, wherein CAT^+ is a cation of a thiazine dye.

13. (Withdrawn): A dye according to Claim 1, wherein CAT^+ is a cation of an oxazine dye.

14. (Withdrawn): A dye according to Claim 1, wherein CAT^+ is a cation of a triarylmethane dye.

15. (Withdrawn): A dye according to Claim 1, wherein CAT^+ is a cation of a diarylmethane dye.

16. (Withdrawn): A dye according to Claim 1, wherein CAT^+ is a cation of an acridine dye.

17. (Withdrawn): A dye according to Claim 1, wherein CAT^+ is a cation of a quinoline dye.

18. (Withdrawn): A dye according to Claim 1, wherein CAT^+ is a cation of an isoquinoline dye.

19. (Withdrawn): A dye according to Claim 1, wherein CAT^+ is a cation of a quaternary azafluorenone dye.

20. (Previously Presented): A dye according to Claim 4, wherein CAT^+ is a cation of a cyanine dye.

21. (Previously Presented): A dye according to Claim 4, wherein CAT^+ is a cation of a carbocyanine dye.

22. (Previously Presented): A dye according to Claim 4, wherein CAT^+ is a cation of an azacarbocyanine dye.

23. (Previously Presented): A dye according to Claim 4, wherein CAT^+ is a cation of a diazacarbocyanine dye.

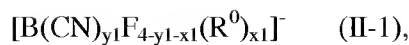
24. (Previously Presented): A dye according to Claim 4, wherein CAT^+ is a cation of a triazacarbocyanine dye.

25. (Previously Presented): A dye according to Claim 4, wherein CAT^+ is a cation of a hemicyanine dye.

26. (Previously Presented): A dye according to Claim 4, wherein CAT^+ is a cation of a diazahemicyanine dye.

27. (Withdrawn): A dye according to claim 1, wherein Y^- is a cyanoborate of

formula II-1



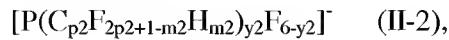
wherein

y1 is 1, 2, 3 or 4,

x1 is 0, 1, 2 or 3 and

R^0 is alkyl, aryl, fluorinated alkyl, fluorinated aryl, cycloalkyl or alkylaryl, with the condition that R^0 may be hydrogen if y1 is >2.

28. (Previously Presented): A dye according to claim 1, wherein Y^- is a fluoroalkylphosphate of formula II-2



wherein

p2 is 1 to 20,

m2 is 0, 1, 2 or 3 and

y2 is 1, 2, 3 or 4 .

29. (Cancelled):

30. (Cancelled):

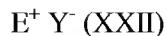
31. (Withdrawn; Currently Amended): A process for the preparation of a cationic dye according to claim 1, said process comprising:

reacting a compound of formula XXI



wherein A^- is Cl^- , Br^- , I^- , BF_4^- , PF_6^- , ClO_4^- , sulfate, tosylate, hydrosulfate, triflate, trifluoroacetate, acetate or oxalate,

with a compound of formula XXII

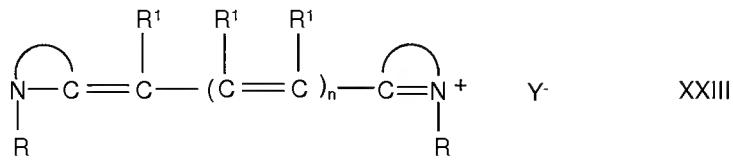


wherein Y^- is CAB^- or FAP^- ~~CAB^- , FAP^- , FAB^- or Im^-~~ , and

E^+ is a cation selected from cations of alkali metals, alkaline earth metals or of a metal

from group 11 and 12, ammonium, alkylammonium containing C₁-C₄-alkyl, phosphonium, alkylphosphonium containing C₁-C₄-alkyl, and guanidinium.

32. (Withdrawn; Currently Amended): A process for the preparation of carbocyanine dye according to Claim 21, where the carbocyanine dye conforms to formula XXIII



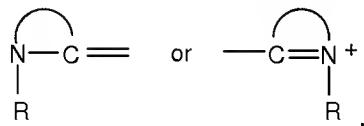
wherein

n is 0, 1, 2, 3, 4 or 5,

R in each case, independently of one another, is alkyl, alkenyl, cycloalkyl, aryl or heteroaryl,

R¹ in each case, independently of one another, is H, Cl, Br, I, alkyl, partially or fully chlorinated alkyl, alkenyl, cycloalkyl, aryl, heteroaryl, Oalkyl, Oaryl, Salkyl, Saryl, NHalkyl, N(alkyl)₂, C(O)H, C(O)alkyl, C(O)aryl, CN, N=N-aryl, P(aryl)₂, NHC(O)alkyl or NHC(O)aryl and

the ring system, represented by

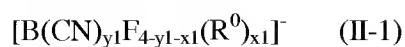


is a nitrogen-containing unsaturated mono-, bi- or tricyclic heterocycle having 5 to 13 ring members, which optionally contains 1, 2 or 3 N and/or 1 or 2 S or O atoms and the heterocyclic radical is optionally mono- or polysubstituted by Z,

Z is hydrogen, alkyl, NO₂, F, Cl, Br, I, OH, COOH, Oalkyl, SCN, SCF₃, COOalkyl, CH₂-COOalkyl, NH₂, NHalkyl or N(alkyl)₂

Y⁻ is an anion selected from CAB⁻ and FAP⁻ CAB⁻, FAP⁻, FAB⁻ and Im⁻,

CAB⁻ conforms to formula (II-1)



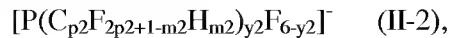
y1 is 1, 2, 3 or 4,

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x1 is 0, 1, 2 or 3,

R⁰ is alkyl, aryl, fluorinated alkyl, fluorinated aryl, cycloalkyl or alkylaryl, with the condition that R⁰ may be hydrogen if y1 is >2, and

FAP⁻ conforms to formula (II-2)

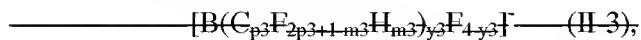


p2 is 1 to 20,

m2 is 0, 1, 2 or 3,

y2 is 1, 2, 3 or 4,

FAB⁻ conforms to formula (II-3)



p3 is 1 to 20,

m3 is 0, 1, 2 or 3,

y3 is 1, 2, 3 or 4,

Im⁻ conforms to formula (II-4)



X is carbon or sulfur,

p4 is 0 to 20 and 0 ≤ m4 ≤ 2p4+1,

q is 0 to 20 and 0 ≤ k ≤ 2q+1,

y4 is 1 or 2,

m4 is 0 if p4 is 0,

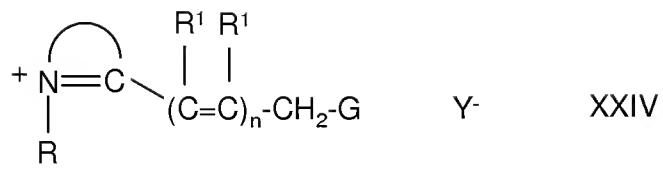
k is 0 if q is 0, and

the carbon atoms of the alkyl chain of the formula II-4 may be bonded to one another by single bonds, where the resultant alkylene chain may in turn be partially or fully substituted by F;

with the proviso that

if X is sulfur, y4 is 2, and if X is carbon, y4 is 1 and p4 or q ≥ 1,

said process comprising utilizing a compound of formula XXIV

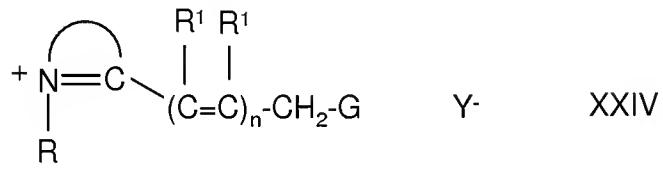


where the ring system, R, R¹ and Y⁻ have one of the meanings indicated in the case of formula XXIII, and

n is 0, 1, 2, 3 or 4 and

G is hydrogen, alkyl, alkenyl, aryl, heteroaryl, N=C(R)₂, CONHaryl, C(O)aryl or CONHalkyl.

33. (Withdrawn; Currently Amended): A compound according to formula XXIV



where

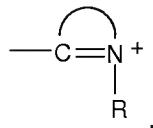
n is 0, 1, 2, 3 or 4,

G is hydrogen, alkyl, alkenyl, aryl, heteroaryl, N=C(R)₂, CONHaryl, C(O)aryl or CONHalkyl,

R is alkyl, alkenyl, cycloalkyl, aryl or heteroaryl,

R¹ is in each case, independently of one another, H, Cl, Br, I, alkyl, partially or fully chlorinated alkyl, alkenyl, cycloalkyl, aryl, heteroaryl, Oalkyl, Oaryl, Salkyl, Saryl, NHalkyl, N(alkyl)₂, C(O)H, C(O)alkyl, C(O)aryl, CN, N=N-aryl, P(aryl)₂, NHC(O)alkyl or NHC(O)aryl, and

the ring system, represented by



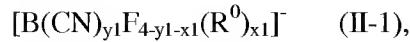
is a nitrogen-containing unsaturated mono-, bi- or tricyclic heterocycle having 5 to 13 ring members, optionally containing 1, 2 or 3 N and/or 1 or 2 S or O atoms and in which the

heterocyclic radical is optionally mono- or polysubstituted by Z,

Z is hydrogen, alkyl, NO_2 , F, Cl, Br, I, OH, COOH, Oalkyl, SCN, SCF_3 , COOalkyl , $\text{CH}_2\text{-COOalkyl}$, NH_2 , NHalkyl or $\text{N}(\text{alkyl})_2$,

Y^- is an anion selected from CAB^- and FAP^- ~~CAB^- , FAP^- , FAB^- and Im^-~~ ,

CAB^- conforms to formula (II-1)

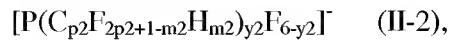


$y1$ is 1, 2, 3 or 4,

$x1$ is 0, 1, 2 or 3,

R^0 is alkyl, aryl, fluorinated alkyl, fluorinated aryl, cycloalkyl or alkylaryl, with the condition that R^0 may be hydrogen if $y1$ is >2, and

FAP^- conforms to formula (II-2)

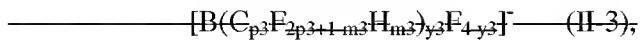


$p2$ is 1 to 20,

$m2$ is 0, 1, 2 or 3,

$y2$ is 1, 2, 3 or 4,

FAB^- conforms to formula (II-3)



$p3$ is 1 to 20,

$m3$ is 0, 1, 2 or 3,

$y3$ is 1, 2, 3 or 4,

Im^- conforms to formula (II-4)



X is carbon or sulfur,

$p4$ is 0 to 20 and $0 \leq m4 \leq 2p4+1$,

q is 0 to 20 and $0 \leq k \leq 2q+1$,

$y4$ is 1 or 2,

$m4$ is 0 if $p4$ is 0, and

k is 0 if q is 0,

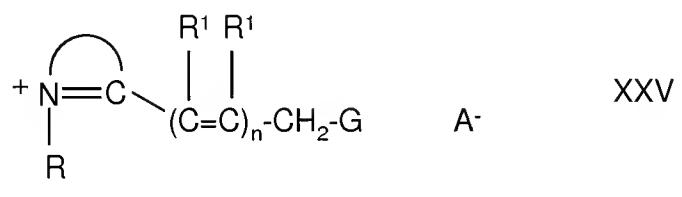
where the carbon atoms of the alkyl chain of the formula II-4 may be bonded to one another by single bonds, and the resultant alkylene chain may in turn be partially or fully substituted by F;

with the provisos that:

if X is sulfur, y4 is 2, and

if X is carbon, y4 is 1 and p4 or q ≥ 1.

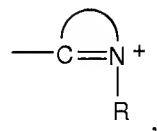
34. (Withdrawn; Currently Amended): A process for the preparation of a compound according to Claim 33, said process comprising reacting a compound of formula XXV



in which

A⁻ is Cl⁻, Br⁻, I⁻, BF₄⁻, PF₆⁻, ClO₄⁻, sulfate, tosylate, hydrosulfate, triflate, trifluoroacetate, acetate or oxalate,

the ring system, represented by



is a nitrogen-containing unsaturated mono-, bi- or tricyclic heterocycle having 5 to 13 ring members, which optionally further contains 1, 2 or 3 N and/or 1 or 2 S or O atoms, and in which the heterocyclic radical is optionally mono- or polysubstituted by Z,

Z is hydrogen, alkyl, NO₂, F, Cl, Br, I, OH, COOH, Oalkyl, SCN, SCF₃, COOalkyl, CH₂-COOalkyl, NH₂, NHalkyl, or N(alkyl)₂,

n is 0, 1, 2, 3 or 4,

R is alkyl, alkenyl, cycloalkyl, aryl or heteroaryl,

R^1 is in each case, independently of one another, H, Cl, Br, I, alkyl, partially or fully chlorinated alkyl, alkenyl, cycloalkyl, aryl, heteroaryl, Oalkyl, Oaryl, Salkyl, Saryl, NHalkyl, N(alkyl)₂, C(O)H, C(O)alkyl, C(O)aryl, CN, N=N-aryl, P(aryl)₂, NHC(O)alkyl, or NHC(O)aryl, and

G is hydrogen, alkyl, alkenyl, aryl, heteroaryl, N=C(R)₂, CONHaryl, C(O)aryl, or CONHalkyl,

with a compound of formula XXVI

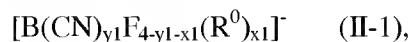


in which

E^+ is a cation of the alkali metals, alkaline earth metals or of a metal from group 11 and 12, ammonium, alkylammonium containing C₁-C₄-alkyl, phosphonium, alkylphosphonium containing C₁-C₄-alkyl, or guanidinium,

Y^- is an anion selected from CAB⁻ and FAP⁻ CAB⁻, FAP⁻, FAB⁻ and Im⁻,

CAB^+ conforms to formula (II-1)

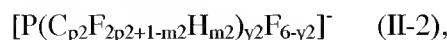


$y1$ is 1, 2, 3 or 4,

$x1$ is 0, 1, 2 or 3,

R^0 is alkyl, aryl, fluorinated alkyl, fluorinated aryl, cycloalkyl or alkylaryl, with the condition that R^0 may be hydrogen if $y1$ is >2, and

FAP^+ conforms to formula (II-2)

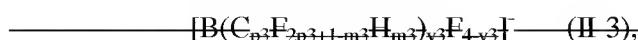


$p2$ is 1 to 20,

$m2$ is 0, 1, 2 or 3,

$y2$ is 1, 2, 3 or 4,

FAB⁻ conforms to formula (II-3)



$p3$ is 1 to 20,

$m3$ is 0, 1, 2 or 3,

y_3 is 1, 2, 3 or 4;

Im^- conforms to formula (II-4)

$[(C_{p4}F_{2p4+m4}H_{m4}XO_{y4})N(C_qF_{2q+k4}H_kXO_{y4})]^-$ (II-4);

X is carbon or sulfur;

p_4 is 0 to 20 and $0 \leq m_4 \leq 2p_4+1$;

q is 0 to 20 and $0 \leq k \leq 2q+1$;

y_4 is 1 or 2;

m_4 is 0 if p_4 is 0, and

k is 0 if q is 0;

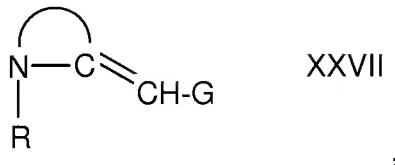
where the carbon atoms of the alkyl chain of the formula II-4 may be bonded to one another by single bonds, and the resultant alkylene chain may in turn be partially or fully substituted by F;

with the provisos that

if X is sulfur, y_4 is 2, and if X is carbon, y_4 is 1 and p_4 or $q \geq 1$.

35. (Withdrawn; Currently Amended): A process for the preparation of a compound according to Claim 33, with the restriction that n in formula XXIV is 0, said process comprising:

reacting a compound of the formula XXVII



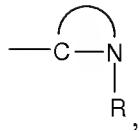
,

in which

G is hydrogen, alkyl, alkenyl, aryl, heteroaryl, $N=C(R)_2$, CONHaryl, C(O)aryl, or CONHalkyl,

R is alkyl, alkenyl, cycloalkyl, aryl or heteroaryl,

the ring system, represented by



is a nitrogen-containing unsaturated mono-, bi- or tricyclic heterocycle having 5 to 13 ring members, which optionally further contains 1, 2 or 3 N and/or 1 or 2 S or O atoms, and in which the heterocyclic radical is optionally mono- or polysubstituted by Z,

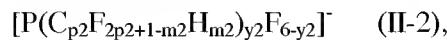
Z is hydrogen, alkyl, NO_2 , F, Cl, Br, I, OH, COOH, Oalkyl, SCN, SCF_3 , COOalkyl , $\text{CH}_2\text{-COOalkyl}$, NH_2 , NHalkyl, or N(alkyl)_2 ,

with a compound HY,

where

Y⁻ is an anion selected from FAP^- , and FAB^- and Im^- ;

FAP^- conforms to formula (II-2)

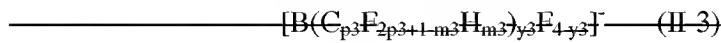


p2 is 1 to 20,

m2 is 0, 1, 2 or 3,

y2 is 1, 2, 3 or 4;

FAB^- conforms to formula (II-3)



p3 is 1 to 20;

m3 is 0, 1, 2 or 3;

y3 is 1, 2, 3 or 4;

Im^- conforms to formula (II-4)



X is carbon or sulfur,

p4 is 0 to 20 and $0 \leq m4 \leq 2p4+1$,

q4 is 0 to 20 and $0 \leq k \leq 2q4+1$,

y4 is 1 or 2,

m4 is 0 if p4 is 0, and

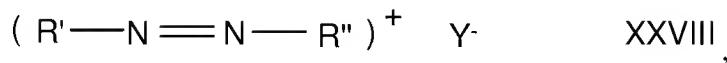
~~k~~ is 0 if ~~q~~ is 0,

where the carbon atoms of the alkyl chain of the formula ~~II-4~~ may be bonded to one another by single bonds, and the resultant alkylene chain may in turn be partially or fully substituted by F;

with the provisos that

~~if X is sulfur, y4 is 2, and if X is carbon, y4 is 1 and p4 or q ≥ 1.~~

36. (Withdrawn; Currently Amended): A process for the preparation of an azo dye dyes according to Claim 6, wherein said azo dye conforms to formula XXVIII

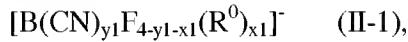


where

~~R'~~ and ~~R''~~ are each aryl or heteroaryl and one of the two aromatic nuclei is positively charged,

~~Y~~⁻ is an anion selected from CAB⁻ and FAP⁻ ~~CAB⁻, FAP⁻, FAB⁻ and Im⁻~~,

CAB⁻ conforms to formula (II-1)

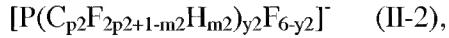


~~y1~~ is 1, 2, 3 or 4,

~~x1~~ is 0, 1, 2 or 3 and

~~R⁰~~ is alkyl, aryl, fluorinated alkyl, fluorinated aryl, cycloalkyl or alkylaryl, with the condition that ~~R⁰~~ may be hydrogen if ~~y1~~ is >2, and

FAP⁻ conforms to formula (II-2)

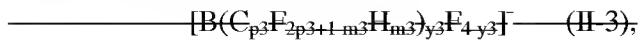


~~p2~~ is 1 to 20,

~~m2~~ is 0, 1, 2 or 3,

~~y2~~ is 1, 2, 3 or 4,

FAB⁻ conforms to formula (II-3)



~~p3~~ is 1 to 20,

m3 is 0, 1, 2 or 3,

y3 is 1, 2, 3 or 4,

Im⁻ conforms to formula (II-4)

[(C_pF_{2p4+l}m₄H_{m4}XO_{y4})N(C_qF_{2q+l+k}H_kXO_{y4})]⁻ (II-4),

X is carbon or sulfur,

p4 is 0 to 20 and 0 ≤ m4 ≤ 2p4+l,

q is 0 to 20 and 0 ≤ k ≤ 2q+l,

y4 is 1 or 2,

m4 is 0 if p4 is 0, and

k is 0 if q is 0,

where the carbon atoms of the alkyl chain of the formula II-4 may be bonded to one another by single bonds, and the resultant alkylene chain may in turn be partially or fully substituted by F,

said process comprising reacting a compound of formula XXIX

R'-N₂⁺ Y⁻ XXIX
,

where R' and Y⁻ has one of the meaning indicated in the case of formula XXVIII,
with an aromatic cyclic or heterocyclic compound R''.

37. (Withdrawn; Currently Amended): A compound according to formula XXIX

R'-N₂⁺ Y⁻ XXIX
,

in which

R' is aryl or heteroaryl,

Y⁻ is an anion selected from CAB⁻ and FAP⁻ CAB⁻, FAP⁻, FAB⁻ and Im⁻,

CAB⁻ conforms to formula (II-1)

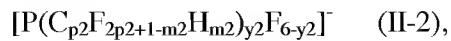
[B(CN)_{y1}F_{4-y1-x1}(R⁰)_{x1}]⁻ (II-1),

y1 is 1, 2, 3 or 4,

x1 is 0, 1, 2 or 3,

R^0 is alkyl, aryl, fluorinated alkyl, fluorinated aryl, cycloalkyl or alkylaryl, with the condition that R^0 may be hydrogen if y_1 is > 2 , and

FAP^- conforms to formula (II-2)

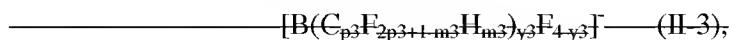


p_2 is 1 to 20,

m_2 is 0, 1, 2 or 3,

y_2 is 1, 2, 3 or 4;

FAB^- conforms to formula (II-3)



p_3 is 1 to 20,

m_3 is 0, 1, 2 or 3,

y_3 is 1, 2, 3 or 4;

Im^- conforms to formula (II-4)



X is carbon or sulfur,

p_4 is 0 to 20 and $0 \leq m_4 \leq 2p_4 + 1$,

q_4 is 0 to 20 and $0 \leq k \leq 2q_4 + 1$,

y_4 is 1 or 2,

m_4 is 0 if p_4 is 0, and

k is 0 if q is 0,

where the carbon atoms of the alkyl chain of the formulae II-4 may be bonded to one another by single bonds, and wherein the resultant alkylene chain may in turn be partially or fully substituted by F;

with the provisos that

if X is sulfur, y_4 is 2, and if X is carbon, y_4 is 1 and p_4 or $q \geq 1$.

38. (Withdrawn): In a method of colouring plastics and plastic fibres, preparing for the preparation of flexographic printing inks, ball-point pen pastes, or stamp ink, coloring

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leather and paper, preparing cosmetic formulations, or coloring in biochemistry, biology, medicine, analytics or electronics, the improvement wherein a dye according to claim 1 is used for coloring.

39. (Withdrawn): In a method of using a dye in data acquisition systems, reprography, in ink microfilters, in photogalvanics, laser technology or the photo industry, the improvement wherein said dye is a dye according to claim 1.

40. (Withdrawn): In a method of using a dye for CD recorders, DVD recorders (DVD+R, DVD+RW), Bluray disc (BD-ROM, BD-R, BD-RE), computer to plate, laser filters, laser marking or photopolymerisation, the improvement wherein said dye is a dye according to claim 1.

41. (Previously Presented): A dye according to Claim 28, wherein CAT^+ is a cation of a polymethine dye.

42. (Previously Presented): A dye according to Claim 28, wherein $p2$ is 1, 2, 3, 4, 5, 6, 7 or 8.

43. (Previously Presented): A dye according to Claim 28, wherein $p2$ is 2, 3 or 4.

44. (Previously Presented): A dye according to Claim 28, wherein Y is $^1PF_3(C_2F_5)_3$, $^1PF_3(C_4F_9)_3$, $^1PF_3(C_3F_7)_3$ or $^1PF_4(C_2F_5)_2$.